

## **REMARKS/ARGUMENTS**

Claims 1 – 11 are pending in the present application, with claim 1 being independent.

The Examiner has further rejected pending claims 1-11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant claims as the invention.

The Examiner has rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by US Patent No. 5,534,915 (“Sandrew”), an earlier patent awarded to this applicant.

Additionally, the Examiner has rejected pending claims 2-4 under 35 U.S.C. §103(a) as being obvious over Sandrew in view of US Patent No. 5,867,169 (“Prater”). The Examiner has further rejected pending claims 5-8 under 35 U.S.C. §103(a) as being obvious over Sandrew in view of US Patent No. 7,136,075 (“Hamburg”). Finally, the Examiner has rejected pending claims 9-11 under 35 U.S.C. §103(a) as being obvious over Sandrew in view of US Patent No. 6,606,166 (“Knoll”).

For at least the reasons stated herein, Applicant asserts that the claims as previously presented, and included herein for easy reference, are patentable over the cited prior art and are therefore in condition for allowance.

### **Claim Rejections under 35 U.S.C. §112**

The Examiner has further rejected pending claims 1-11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant claims as the invention. Particularly, the Examiner states, “Applicant does not discloses what are the base color function(s), injection color function(s) and what do these functions performing; and what are the range limits of ‘first luminance range’ and ‘second luminance value’ in the disclosure. It is unclear what does applicant refer to ‘selecting at least one injection color function for said region’, ‘selecting at least one injection color function for said region’ and how large or small the ‘luminance range’ in his claim for patentability protection.” Examiner has further rejected dependent claims 2-11 on the same basis.

Applicant respectfully disagrees with the Examiner that the “what these functions

“perform” is not disclosed in the applicant. In regard to “base color function,” the Applicant refers the Examiner to at least the following citations in the publication: abstract, Figure 4 (including base color functions space 401), Figure 5 (including base color functions space 401), Figure 6 and 7, paragraphs 0011, 0031, and 0038-0041. In regard to the term “injection color function,” the Applicant refers the Examiner to at least the following citations in the publication: Figure 4, 5 and 6 (including injection color function space 400), paragraphs 0011, and 0031-0040. In regard to the range limit(s) for luminance range, Applicant refers Examiner to at least the following citation in the application: paragraphs 0030, 0032, 0034, and 0038.

### **Examiner’s Claim Interpretation**

In view of the 35 U.S.C. § 112, second paragraph rejection, the Examiner has interpreted the claim terms “base color function” as defined base color, or primary color, or additive color like Red, Green and Blue color, etc.; “injection color function” as another defined base color, or subtractive color like Cyan, Magenta, yellow and black color, etc.; and “luminance range” as any reasonable luminance value range in the application prosecution. Applicant requests the Examiner reconsider this narrow interpretation of claim terms in light of at least the specification references cited above.

### **Claim Rejections under 35 U.S.C. §102(b)**

The Examiner has rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by US Patent No. 5,534,915 (“Sandrew”). Applicant respectfully disagrees with the Sandrew ‘915 as anticipation prior art, because the reference fails to disclose at least the concepts of enhancing a region of an image by applying at least one injection color function using at least one pattern function mixed with at least one base color function. The Sandrew ‘915 reference is earlier work by the same inventor as the present application. This patent teaches a method of color enhancing an image comprised of a plurality of pixels representing gray-scale values using two or more base colors. Within each region, there is a one-to-one mapping between gray-scale values to hue in Sandrew ‘915. While novel for its time, the method of “colorizing” taught in Sandrew ‘915, is over a decade old. The method of the present invention is a non-obvious advancement over Sandrew ‘915 because it teaches applying at least one color injection function using at least one pattern function mixed with at least one base color function to each pixel in the region of the image to be enhanced. Thus, embodiments of the invention enable one-to-many mapping of

luminance or gray-scale to color as per paragraph 9 for example. In addition, this process is described in detail in the application, at least in Figures 6 and 7, and various paragraphs including paragraph 41. Sandrew '915 does not teach applying an injection color function or using a pattern function as described in the present invention. Further, the present invention associates a first luminance value with a first luminance range with the base color function, and a second luminance value and second luminance range with the injection color function, as further described in at least paragraphs 0030-0032. Sandrew '915 does not teach use using multiple color spaces for injection and base colors with each color space extending for a range of luminance values. The use of such innovations of the present invention greatly improves the result of the colorization process, producing the most realistic colorization to date.

### **Claim Rejections under 35 U.S.C. § 103(a)**

The Examiner has rejected pending claims 2-4 under 35 U.S.C. §103(a) as being obvious over Sandrew in view of US Patent No. 5,867,169 ("Prater"). The Examiner has further rejected pending claims 5-8 under 35 U.S.C. §103(a) as being obvious over Sandrew in view of US Patent No. 7,136,075 ("Hamburg"). Finally, the Examiner has rejected pending claims 9-11 under 35 U.S.C. §103(a) as being obvious over Sandrew in view of US Patent No. 6,606,166 ("Knoll"). Claims 2-11 depend from and are further limitations of independent Claim 1, and are therefore respectfully allowable over the cited prior art for at least the reasons stated above.

### **Summary**

Applicant further respectfully submits that Sandrew, neither alone nor in combination with Prater, Hamburg or Knoll teaches, suggests or discloses in a computer system a method of enhancing an image comprising: selecting at least one base color function for a region of an image; selecting at least one injection color function for the region; associating a first luminance value and a first luminance range with the at least one base color function; associating a second luminance value and a second luminance range with the at least one injection color function; selecting at least one pattern function for the at least one injection color function; and, applying the at least one injection color function using the at least one pattern function mixed with the at least one base color function to the region of the image for each luminance value within the region.

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Claims 2-11 depend from and are further limitations of independent Claim 1, and are therefore respectfully allowable over the cited prior art for at least the reasons stated above.

### **Conclusion**

Claims 1-11 are pending in the present applicant. Claim 1 is an independent claim. Applicant asserts that the claims as presented herein are patentable over the cited prior art for at least the reasons stated herein and are therefore in condition for allowance. Applicant respectfully requests a timely Notice of Allowance for the claims in this case.

Respectfully submitted,

DALINA LAW GROUP, P.C.



By \_\_\_\_\_

Cynthia A. Casby  
Reg. No. 47,475  
Tel.: 626-405-1413  
Fax: 858-777-5425